

REMARKS

Applicant has cancelled withdrawn claims 39-42. Thus, claims 22-38 and 43-45 are pending in this application. Applicant has made the amendment in a genuine attempt to address the Examiner's concerns and to place the application in a better condition for allowance or for appeal. It is believed that these amendments do not raise new issues that would require a new search to be conducted. As such, Applicant respectfully requests that these amendments be entered.

The Examiner indicated that claims 31-34 are allowable if they are rewritten in independent form including all of the limitations of the base claims and any intervening claims. Applicant gratefully acknowledges the Examiner's indication of allowable subject matter.

The Examiner rejected claims 22-25 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4 of U.S. Patent No. 6,537,270 which is assigned to the same assignee as the present application. Applicant respectfully requests reconsideration of the rejection.

As discussed in more detail below with respect to the Section 102 rejection, one important feature of the present invention as claimed in claim 22 is the unique optical element that can influence the intensity distribution in the laser beam cross-section such that the laser beam has a Gaussian distribution. This unique feature provides the advantage of a very smooth overall surface and no steplike, steep structure remains on the surface, which results in a substantial reduction in treatment time, especially in the correction of curvatures of the cornea. This feature is not recited in any of claims 1-4 of the '270 patent. This feature is also certainly not obvious from the '270 patent. If the Examiner still believes that this feature is obvious, Applicant respectfully requests the Examiner, under M.P.E.P. Section 2144.03, to produce a reference that suggests that a Gaussian intensity distribution produced from an optical element is useful in shaping an object. If the Examiner cannot produce such a reference, Applicant respectfully requests the Examiner to withdraw the obviousness type double patenting rejection of claims 22-25.

The Examiner objected to claim 38 because "pot-shaped intensity" is believed to be an error. Applicant submits that the "pot-shaped intensity" is correct. As disclosed in the

specification of the present application, the term refers to an intensity distribution in which the “intensity rises or falls very steeply in the edge regions of the laser beam” similar to the shape of a pot (e.g., flower pot, cooking pot, etc.).

The Examiner rejected claims 22-28 , 30, 35, 38, 43 and 44 under 35 U.S.C. Section 102(b) as being anticipated by James (US Patent No. 5463200). Applicant respectfully requests the Examiner to reconsider the rejected claims based on the following comments.

According to the present invention as claimed in claim 22, a device for shaping an object such as an eye is provided. The device includes an optical element with a microoptically active structure. The microoptically active structure influences the intensity distribution in the laser beam cross-section such that the laser beam has a bell-shaped or Gaussian distribution.

In contrast to the conventional application of mutually overlapping spots with pot-shaped radiation intensity distribution on the surface to be ablated, the present device has the advantage that a very smooth overall surface can be realized very quickly when spots with a Gaussian intensity distribution overlap. No steplike, steep structure remains on the surface. Therefore, subsequent treatment of the surface is required only to a limited extent or not at all. As a result, the treatment time can be substantially reduced especially in the correction of curvatures of the cornea with the present device.

This novel feature is recited in claim 22 as “the laser beam, after passing through said optical element, has a bell-shaped or Gaussian intensity distribution . . . in at least one cross-sectional direction”.

By contrast, the James reference neither teaches nor suggests an optical element that can generate a bell-shaped or Gaussian intensity distribution of the laser beam. The “optical device 14” the Examiner cited in the James reference is a diffractive microoptic effective element. As such, this element does not help the James device in producing a Gaussian intensity distribution of the laser beam.

Moreover, Applicant would like to provide the following remarks which further differentiate the device of claim 22 over the James reference.

In the James reference, a marking technology is described by which material on an object such as a semiconductor wafer is cleared away with the help of a mask or stencil. Referring to FIG. 1, after passage through the mask 22, the laser beam strikes the micro lens array 14. The

laser beam strikes only the positions of the micro lens array 14 where openings of the mask 22 are provided. Accordingly, the model of the worked-on work piece is constructed which corresponds to the mask 22.

According to Fig. 14 of James, the mask is formed as a controllable “reflective light modifying device 26A.” The constructed model is therefore changeable. In a further example, a diffractive-microoptic effective lens arrays is used (Col. 4, line 56 to Col. 5, Line 7). The micro-lens array 14 is arrayed as a mask 22, which has holes 24, through which the partial beams 18 go through and so that a model is constructed on the work piece.

Thus, the object of James belongs to the “mask imaging marking method” which is described in the background section at Col. 2, line 10-30. In James, it is also pointed out in Col. 1, line 63 to Col. 2, line 9 that it is also a “focus spot marking method.”

By contrast, the present invention belongs to the general area of “focus spot marking method and devices” and therefore needs no “deflecting device 26A” as the Examiner asserted. In other words, the “deflecting device 26A” of James is not a “deflecting device through which the laser beam is guided over the surface of the object” as claimed in claim 22. Indeed, “deflecting device 26A” cited by the Examiner is “a light modifying device 26 which can form an array controlled by a computer 27, to achieve the same effect as the mask of Fig. 1 and Fig. 3” (Column 7, line 67 to col. 8, line 2).

For the similar reasons as discussed above with respect to claim 22, Applicant submits that independent claims 35 and 43 are also patentable.


Dependent claims 23-30, 36-38 and 44 are also patentable by virtue of their dependency from independent claims 22, 35 and 43.

Based upon the above amendments and remarks, Applicant respectfully requests reconsideration of this application and its earlier allowance. Should the Examiner feel that a telephone conference with Applicant's attorney would expedite the prosecution of this application, the Examiner is urged to contact him at the number indicated below.

Respectfully submitted,

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